AMENDMENTS TO THE CLAIMS

Please cancel claim 5 and amend claims 1, 6, and 16. No new matter is believed to be introduced as a result of the aforementioned amendments. The following list of claims replaces all previous claim listings in this case.

1. **(Currently amended)** A method of mitigating dispersion effects in a high frequency communications channel, the method comprising:

passing a signal through an adjustable linear filter, the adjustable linear filter having a plurality of coefficients, the output of the adjustable linear filter being an electrical signal;

calculating a figure of merit that represents a quality of the electrical signal; and

adjusting the coefficients of the adjustable linear filter based at least on the value of the figure of merit so as to minimize the figure of merit and improve the quality of the electrical signal;

wherein the figure of merit is determined from the equation:

$$F = \frac{M_4}{(M_2)^2}$$

wherein F is the value of the figure of merit; $A(t)$ is the amplitude of the electrical signal; M_4 is the fourth moment of the electrical signal and equals the time average of $A^4(t)$, and M_2 is the second moment of the electrical signal and equals the time average of $A^2(t)$.

2. **(Original)** The method of claim 1 wherein the dispersion effects may be represented as a channel response, the method further comprising calculating a channel response from the figure of merit and the coefficients of the linear filter.

3. **(Original)** The method of claim 1 further comprising:

measuring a magnitude of a spectrum of the signal;

adjusting the coefficients of the linear filter based on at least the magnitude of the spectrum of the signal.

4. **(Original)** The method of claim 1 wherein calculating the figure of merit includes using a time average of the figure of merit.

5. **(Cancelled)**

6. **(Currently amended)** A signal conditioner for use in mitigating the effects of dispersion in a signal, the signal conditioner comprising:

an adjustable linear filter including a plurality of adjustable coefficients, the adjustable linear filter configured to receive a signal and to produce an output signal based on the adjustable coefficients of the linear filter;

a circuit coupled to the adjustable linear filter configured to calculate a figure of merit by calculating a second and a fourth moment of the output signal; and

a microcontroller coupled to the circuit and to the adjustable linear filter, the microcontroller configured to provide the adjustable coefficients based on a value of the figure of merit;

wherein the figure of merit is determined from the equation:

$$F = \frac{M_4}{(M_2)^2}$$

wherein F is the value of the figure of merit; $A(t)$ is the amplitude of the output signal; M_4 is the fourth moment of the output signal and equals the time average of $A^4(t)$, and M_2 is the second moment of the output signal and equals the time average of $A^2(t)$.

7. **(Original)** The signal conditioner of claim 6, the circuit being an analog circuit, the signal conditioner further comprising an analog to digital converter coupled between the microcontroller and the circuit, the analog to digital converter configured to digitize the figure of merit.

8. **(Original)** The signal conditioner of claim 6, further comprising a digital to analog converter coupled between the microcontroller and the adjustable linear filter, the digital to analog converter configured to convert signals from the microcontroller into the adjustable coefficients usable by the adjustable linear filter.

9. **(Original)** The signal conditioner of claim 6, wherein the circuit comprises an integrator configured to produce a time average value of the figure of merit.

10. **(Original)** The signal conditioner of claim 9, wherein the integrator is an analog capacitor type integrator.

11. **(Original)** The signal conditioner of claim 6, further comprising a spectrum analyzer configured to measure the spectrum of the received signal, the microcontroller configured to use the measured spectrum when providing adjustable coefficients.

12. **(Original)** The signal conditioner of claim 6, wherein the signal conditioner is adapted for use in mitigating dispersion effects in multi-mode fiber optic cables.

13. **(Original)** The signal conditioner of claim 6, wherein the signal conditioner is adapted for use in mitigating chromatic dispersion.

14. **(Original)** The signal conditioner of claim 6, wherein the signal conditioner is adapted for use in mitigating polarization mode dispersion.

15. **(Original)** The signal conditioner of claim 6, wherein the signal conditioner is adapted for use in mitigating dispersion in high-speed electrical transmission lines.

16. **(Currently amended)** A signal conditioner for use in interpreting a signal that has experienced dispersion caused at least by intersymbol interference, the signal conditioner comprising:

an adjustable linear filter that receives an input signal, wherein linear coefficients of the adjustable linear filter alter the input signal to remove at least a portion of dispersion in the input signal;

a circuit that determines a figure of merit from an output signal of the adjustable linear filter, wherein the figure of merit is related to at least a phase component of the output signal; and

a microcontroller that uses the figure of merit determined by the circuit to adjust the linear coefficients of the adjustable linear filter such that a quality of the output signal improves;

wherein the figure of merit is determined from the equation:

$$F = \frac{M_4}{(M_2)^2}$$

wherein F is the figure of merit; $A(t)$ is the amplitude of the output signal; M_4 is the fourth moment of the output signal and equals the time average of $A^4(t)$, and M_2 is the second moment of the output signal and equals the time average of $A^2(t)$.

17. **(Original)** The signal conditioner of claim 16, the circuit being an analog circuit, the signal conditioner further comprising an analog to digital converter coupled between the microcontroller and the circuit, the analog to digital converter configured to digitize the figure of merit.

18. **(Original)** The signal conditioner of claim 16, further comprising a digital to analog converter coupled between the microcontroller and the adjustable linear filter, the digital to analog converter configured to convert signals from the microcontroller into the linear coefficients usable by the adjustable linear filter.

19. **(Original)** The signal conditioner of claim 16, wherein the circuit comprises an integrator configured to produce a time average value of the figure of merit.

20. **(Original)** The signal conditioner of claim 19, wherein the integrator is an analog capacitor type integrator.

21. **(Original)** The signal conditioner of claim 16, further comprising a spectrum analyzer configured to measure the spectrum of the signal, the microcontroller configured to use the measured spectrum when providing adjustable coefficients.

22. **(Original)** The signal conditioner of claim 16, wherein the signal conditioner is adapted for use in interpreting signals caused by multi-mode fiber optic cables.

23. **(Original)** The signal conditioner of claim 6, wherein the signal conditioner is adapted for use in interpreting signals caused by chromatic dispersion.

24. **(Original)** The signal conditioner of claim 16, wherein the signal conditioner is adapted for use in interpreting signals caused by polarization mode dispersion.

25. **(Original)** The signal conditioner of claim 16, wherein the signal conditioner is adapted for use in interpreting signals caused by high-speed electrical transmission lines.